



2013 Carbon Neutral Action Report

Provincial Health Services Authority



Executive Summary

Carl Roy

President and Chief Executive Officer

Provincial Health Services Authority (PHSA) strives to be leaders in providing better health and province wide solutions to meet today's health care challenges. It is with great pride, that I present PHSA's fourth annual Carbon Neutral Action Report (CNAR).

Taking responsibility for the organization's carbon footprint is one reason PHSA was named one of Canada's Greenest Employers in 2012 and 2013.

In 2013, PHSA had a carbon footprint of 20,805 tonnes of carbon dioxide equivalent (tCO₂e), which was offset through Pacific Carbon Trust at a total cost of \$564,926. This represents a 17 per cent decrease from the 2012 PHSA carbon footprint, and saved the organization more than \$112,000 in carbon offset costs.

We decreased our carbon footprint by reducing steam usage at BC Cancer Research Centre as part of a recently completed energy conservation project at the site. We also decommissioned Riverview Hospital.

It is further estimated that the energy conservation projects completed in 2013 will reduce our energy consumption by 3.2 eGWH, and save PHSA \$130,000 per year.

I look forward to again being named one of Canada's Greenest Employers as the organization continues to take firm steps to reduce its carbon and environmental footprint. The energy management team has nine projects in progress or pending, which are expected to achieve an additional 3.9 eGWh of estimated avoided energy consumption and \$120,000 in energy savings.

Provincial Health Services Authority GHG Emissions and Offsets for 2013 (tCO₂e)

GHG Emissions created in calendar year 2013	
Total Emissions	20,815
Total Emissions for Offsets	20,805
Adjustments to GHG Emissions Reported in Previous	
Total Emissions	716
Total Emissions for Offsets	716
Credit owing from PCT at end of 2012 reporting year	
Credit Owing	0
Total Emissions for Offsets for the 2013 Reporting Year:	21,521

Table 1

21,521 (tCO₂e) is PHSA's
2013 Carbon Footprint

-8%

Change in
CO₂
Emissions
per Full-
Time
Employee
since 2010

-17%

Change in
PHSA's
Carbon
Footprint
since 2012.

-12% Change in Usable
Facility Space since 2010.

Our CO₂ Footprint

2013 GREENHOUSE GAS EMISSIONS BREAKDOWN AND OFFSETS APPLIED TO BECOME CARBON NEUTRAL

Provincial Health Services Authority (PHSA) reports their organizational carbon footprint in accordance with the Greenhouse Gas Reduction Targets Act (GGRTA) and the Carbon Neutral Government Regulation (CNGR) under guidance from the B.C. Climate Action Secretariat (CAS).

CAS provides guidance on which greenhouse gas (GHG) emissions are considered in scope in accordance with the legislation (see side bar). In non-technical terms, the main sources of GHG emissions can be grouped in three categories:

1. Stationary Emissions (Buildings)
 - a. Direct fuel combustion
 - b. Indirect (purchased electricity)
 - c. Fugitive emissions (HFC's)
2. Mobile Emissions (Fleet Vehicles)
3. Supplies (Paper)

Over 95% of PHSA's carbon footprint is related to the energy consumption from its owned and leased buildings. The majority of emissions from buildings are related to fossil fuel use for space heating, hot water and process heating loads.

Provincial Health Services Authority

PHSA's 2013 Carbon footprint was determined to be 21,521 tonnes of carbon dioxide equivalent (tCO₂e).

To become carbon neutral in 2013, PHSA purchased carbon offsets from the Pacific Carbon Trust at a total cost of \$564,926.

CHANGES TO FACILITY SQUARE FOOTAGE AND WEATHER ADJUSTMENT

PHSA's useable facility space has decreased 12% since 2010, which is largely due to the decommissioning of the Riverview property. During the same time, the number of staff (measured in full time equivalents) has increased 7%. During this time, PHSA has controlled increases in facility space by seeking opportunities to optimize existing space use while maintaining safety and efficiency.

Since 2010, emissions per full-time employee at PHSA (2.05 tCO₂e/FTE) have decreased by 8%; however, emission per unit of floor area (0.061 tCO₂e/m²) have increased 12%, suggesting that the intensity of space use has increased.

The carbon emissions reported are not adjusted for changes in weather.



Definition and Implications

In accordance with CNGR, the Climate Action Secretariat of British Columbia has outlined the types and sources of emissions that are in scope and which are out of scope.

All Health Authorities are required to report emissions from buildings (direct combustion, indirect purchased electricity, & fugitive emissions from HFC's), fleet, and paper.

In Scope

Six GreenHouse Gases are in scope for measuring & reporting:

Carbon Dioxide - CO₂
Methane - CH₄
Nitrous Oxide - N₂O
Sulphur Hexafluoride - SF₆
Per fluorocarbons - PFCs
Hydro fluorocarbons - HFCs

Out of Scope

All other GHG gases are considered out of scope

BUILDINGS, FTE AND WEATHER	2010	2011	2012	2013
Distinct PHSA Buildings	78	80	84	83
% Owned	57%	57%	57%	68%
% Leased	43%	43%	43%	32%
Usable Square Meters	389,883	392,728	400,444	342,311
Full-Time Employee Equivalents *	9,492	9,022	10,646	10,148
Weather (summarized in Heating Degree Days) ¹	2,853	2,963	2,874	2,828

¹ Building energy consumption is influenced by climate conditions. Vancouver has a climate which predominantly requires heating to satisfy internal building temperatures. Heating Degree Days (HDD's) is a measurement designed to reflect the demand for energy needed to heat a building.

Table 2

Actions Taken To Reduce Our CO₂ Footprint

2013 LIST OF ACTIONS TAKEN TO REDUCE CO₂ FOOTPRINT

Stationary Fuel Combustion, Electricity (Buildings)

PHSA completed 3 energy savings projects in 2013:

- Coil Cleaning at the Children's and Women's Health Centre (CWHC) campus. Coil cleaning is an initiative to clean the heating and cooling coils within the mechanical systems that deliver fresh air to the building in order to improve indoor air quality and reduce energy consumption by improving heat transfer.

Our Carbon Footprint (in tCO₂e)		2010	2011 ^{2,3}	2012 ^{2,4}	2013
CO₂	Mobile Fuel Combustion (Fleet & other mobile equipment)	195	181	204	154
	Stationary Fuel Combustion & Electricity (Buildings)	20,079	22,302	24,609	19,890
	Supplies (Paper)	891	912	839	771
	Emissions Which Do Not Require Offsets ¹	0	-8	-10	-10
	Total Carbon Footprint (tCO₂e)	21,165	23,387	25,641	20,805
	Adjustments / Corrections To Previous Year's Data	0	0	149	716
Carbon Footprint (needing offsetting) in tCO₂e		21,165	23,387	25,790	21,521
\$	Purchased Carbon Offsets ²	\$ 617,907	\$ 540,036	\$ 644,750	\$ 538,025
	Purchased Carbon Offsets +HST / GST	\$ 692,056	\$ 604,841	\$ 676,988	\$ 564,926
KPI	Emissions per Full-Time Employee	2.23	2.59	2.41	2.05
	Emissions per Meter Square Facility Space	0.054	0.060	0.064	0.061

¹ As outlined in the Carbon Neutral Government Regulation of the Greenhouse Gas Reductions Target Act, some emissions do not require offsets.

have been deemed out-of-scope and have not been included in our total greenhouse gas emissions profile.

² Carbon Footprint adjusted for 2011 in 2012, due to building data corrections from the Climate Action Secretariat.

³ Purchase Carbon Offsets for 2012 include Carbon Footprint adjustment for 2011, due to building data corrections from the Climate Action Secretariat.

⁴ As outlined in the Carbon Neutral Government Regulation of the Greenhouse Gas Reductions Target Act, some emissions do not require offsets.

Table 3

- Chilled Water Plant upgrades (Phase 1) at CWHC
- The implementation of optimization measures at BC Cancer Research Centre (BCCRC) as part of the BC Hydro and Fortis BC sponsored Continuous Optimization (C.Op.) program

These three projects are projected to achieve a total **estimated savings of 1.3 GWh of electricity, 6,700 gigajoules (GJ) of natural gas, 360 (tCO₂e) of carbon and \$139,000.**

Mobile Fleet Combustion (Fleet and other vehicles)

PHSA installed 5 electric vehicle charging



Register at c3community.ca

stations across 2 core sites: (CWHC) & Child & Family Research Institute (CFRI).

A record 145 PHSA staff participated in the 2013 Clean Commuter Challenge (CCC), which is a campaign to get staff out of there single occupancy vehicle commuting.

Supplies (Paper)

The Green + Leaders (G+L) behaviour change program recruited 16 new PHSA volunteers in the fall of 2013. This brings PHSA total to 71. This program now has nearly 300 health care volunteers across the lower mainland Health Authorities.

As part of the G+L paper/waste reduction campaign volunteers were supplied with Paperless Meeting Toolkits to encourage their colleagues to reduce paper use.

PHSA continues to support the GreenCare Community (GCC) website, which provides tips and toolkits on using less paper, such as promoting paperless meetings.

Actions That Fall Outside the Scope of the Carbon Neutral Government Regulations

In addition to specific projects mentioned previously, PHSA also did the following:

- Encouraged the use of the internally organized Jack Bell shuttle when traveling between various sites.
- Developed a staff engagement strategy to improve communication

with Facilities Maintenance and Operations (FMO) staff with a focus on understanding the barriers to ongoing optimization of existing equipment and systems.

- Initiated the development of an engagement and integration strategy with Facilities Strategic Planning and Capital Project teams to embed energy conservation principles in their process and projects.
- Continued to promote energy conservation and GHG emissions reduction through staff focused awareness and behaviour change programs, such as Green + Leaders, GreenCare Community website and the BC Hydro Workplace Conservation Agreement program.

FUTURE WORK TO REDUCE THE ORGANIZATION'S CO₂ FOOTPRINT

In **2014** PHSA plans to continue reducing GHG emissions and Energy use by:

1. Implementing GHG/Energy reduction retrofit projects in our existing facilities.
2. Optimizing the mechanical plant and controls in our existing facilities.
3. Engaging with site Operations staff and external Consultants to identify GHG / Energy opportunities.

4. Engaging with Strategic Planners and Capital Project Managers to ensure that energy conservation is embedded in their process and projects scopes.
6. Engaging with our external key stakeholders, such as utility partners, to identify energy reduction projects.
7. Engaging and educating our staff via the existing Green + Leaders program, GreenCare Community and the BC Hydro Workplace Conservation Agreement.
8. Building partnerships with our P3 partners to help them identify energy conservation opportunities.
9. Building partnerships with Cities and Municipalities to investigate District Energy Systems opportunities
10. Investigating renewable/clean cost effective energy solutions.

SUCCESS STORY

Alex Hutton, Energy Manager for PHSA, has laid a strong foundation for energy management in her first 2 years.

Energy Management

In 2013 PHSA had many success stories in reducing energy. In direct relation to Carbon Neutral Actions, the Continuous Optimization (C.Op.) program at the BC Cancer

Research Centre (BCCRC) stands out as a major success.

This project stands out not just because of the significant energy savings, but also because of the level of engagement with the research staff, who occupy the building, as well as the degree of support from the Facilities Maintenance and Operations (FMO) staff. William Man (FMO Manager at BC Cancer Research Centre) and his team worked closely with the energy consultants on the implementation of the C.Op. program.

Energy saving features

The BCCRC maintenance staff worked with the consultant to identify an opportunity to reduce excess ventilation. Being a lab building high air change rates are required to balance the exhaust from fume hoods

and biosafety cabinets. Through this project the general ventilation and exhaust rates were optimized to avoid wasting energy while maintaining safety and code requirements.

This project required a great deal of engagement with occupants and lab safety staff to gain full support for the ventilation optimization and explain how safety would be maintained.

The estimated annual savings, from this specific project, is approximately 0.88 GWh of electricity, 6,700 GJ of gas, 357 tCO₂e of carbon, and \$100,000 in avoided energy costs.

After adjusting for weather variation, the steam use at BCCRC has reduced by 14% since the 2012 and this savings is attributed to this project. 🟩



2013 Carbon Neutral Action Report (CNAR) - Part 2 ACTIONS

Created Friday, May 30, 2014

<https://fluidsurveys.com/surveys/cas-z/2013-cnar-form-bps-actions/a711e8a95c7938fae576e4ce11236d35/>

Page 1

Please complete the following sections of the 2013 Carbon Neutral Action Report form. Save your work frequently to prevent it from being lost. You can also save a copy for your own use as either a WORD or PDF file using the buttons at the bottom of each page.

This is Part 2 of the Carbon Neutral Action Report form. This section reports on actions taken to reduce emissions during the 2013 calendar year. This information will be included in your final Carbon Neutral Action Report posted on the Ministry of Environment website.

When the form is complete press the submit button on the last page to automatically submit the information to the Climate Action Secretariat (CAS). Do not press submit before you are ready – this may result in a loss of work.

In addition to completing this survey (Part 1 2), you are required to submit your completed Overview (Executive Summary) and Self-Certification Checklist. The 2013 Overview template was included in the email sent and can also be found on the LiveSmart leaders Community.

Please ensure you meet the following reporting deadlines:

A DRAFT 2013 CNAR is due to CAS by March 31, 2014. The draft is comprised of the Overview ONLY (no executive sign-off required).

The FINAL 2013 CNAR is due to CAS by May 30, 2014. The final 2013 CNAR includes Part 1 Part 2 survey form and Overview.

The Self-Certification Checklist is due to CAS by May 15, 2014.

For more information about the Carbon Neutral Government process, please refer to *Becoming Carbon Neutral 2013*, or should you have any questions please contact climateactionsecretariat@gov.bc.ca.

Organization Name

Provincial Health Services Authority

Actions Taken to Reduce Emissions

1) Stationary Fuel Combustion, Electricity (Buildings):

Indicate which actions were taken in 2013:

Performed energy retrofits on existing buildings

Yes

Built or are building new LEED Gold or other "Green" buildings.

Yes

Undertook an evaluation of overall building energy use.

Yes

Please list any other actions taken to reduce emissions from Buildings:

The main projects completed in 2013 were the following:

- Coil Cleaning at the Children's and Women's Health Centre (CWHC) campus
- Chilled Water Plant upgrades (Phase 1) at CWHC
- The implementation of optimization measures at BC Cancer Research Centre (BCCRC) as part of the BC Hydro and Fortis BC sponsored Continuous Optimization (C.Op.) program

The estimated annual energy, GHG emission, and cost avoidance from these projects are approximately 1.3 GWh of electricity, 6,700 GJ of gas, 360 tCO₂e of carbon, and \$139,000.

In addition to specific projects, we also did the following:

1. Developed a strategy to improve engagement with Facilities Maintenance and Operations (FMO) staff with a focus on understanding the barriers to ongoing optimization of existing equipment and systems.
2. Started developing an engagement strategy with our Strategic Planning and Capital Project teams to embed energy conservation principles in their process and the scope of each project.
3. Continued to promote energy conservation and GHG emissions reduction through awareness and behaviour change programs, such as Green + Leaders, GreenCare Community website and the BC Hydro Workplace Conservation Agreement program.

2) Mobile Fleet Combustion (Fleet and other vehicles):

Indicate which actions were taken in 2013:

Do you have a fleet?

Yes

Replaced existing vehicles with more fuel efficient vehicles (gas/diesel)

No

Replaced existing vehicles with hybrid or electric vehicles

No

Reduced the overall number of fleet vehicles

No

Took steps to drive less than last year

No

Please list any other actions taken to reduce emission from fleet:

(No response)

3) Supplies (Paper):

Indicate which actions were taken in 2013:

Used less paper than previous year

Yes

Used only 100% recycled paper

No

Used some recycled paper

Yes

Used alternate source paper (Bamboo, hemp, etc.)

No

Please list any other actions taken to reduce emissions from paper use:

The Green + Leaders (G+L) behaviour change program recruited 16 more volunteers in the fall of 2013 and now there are 71 volunteers in PHSA. As part of the paper/waste reduction campaign the volunteers were supplied with Paperless Meeting Toolkits to encourage their colleagues to reduce paper use.

In addition, our online GreenCare Community (GCC) site includes content and provides tips on using less paper, such as promoting paperless meetings.

Actions Taken to Reduce Emissions - continued

Explain how you plan to continue minimizing emissions in 2014 and future years:

PHSA plans to continue reducing GHG emissions and Energy use by:

- 1. Implementing GHG/Energy reduction retrofit projects in our existing building portfolio.*
- 2. Optimizing the mechanical plant and controls in our existing building portfolio.*
- 3. Engaging with site Operations staff and external Consultants to identify GHG/Energy opportunities.*
- 4. Engaging with Strategic Planners and Capital Project Managers to ensure that energy conservation is embedded in their process and projects scopes.*
- 6. Engaging with our external key stakeholders, such as utility partners, to identify capital incentive energy reduction projects.*
- 7. Engaging and educating our staff via the existing Green + Leaders program, GreenCare Community and the BC Hydro Workplace Conservation Agreement.*
- 8. Building partnerships with our P3 partners to help them identify energy conservation opportunities.*
- 9. Building partnerships with Cities and Municipalities to investigate District Energy Systems opportunities with alternative energy solutions.*
- 10. Investigating renewable/clean cost effective energy solutions.*

If you wish to list any other "sustainability actions" outside of buildings, fleet, paper and travel check "yes". This reporting is optional.

Yes

Actions to Promote Sustainability and Conservation - Optional

The following are actions that fall outside the scope of the *Carbon Neutral Government Regulation*, but which many organizations still undertake and may wish to report on. This section is optional for reporting.

Business Travel

Created a low-carbon travel policy or travel reduction goal (Low-carbon: Lowest emission of greenhouse gases per kilometre per passenger)

Yes

Virtual Meeting Technology

Installed web-conferencing software (e.g., Live Meeting, Elluminate, etc.)

Yes

Made desktop web-cameras available to staff

Yes

Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)

Yes

Encourage carpooling to meetings

Yes

Education and Awareness

Have created Green, Sustainability, Energy Conservation, or Climate Action Teams.

Yes

Provided resources and/or dedicated staff to support these teams

Yes

Provided behaviour change education/training for these teams (e.g., community-based social marketing)

Yes

Established a sustainability/green awards or recognition program

Yes

Support green professional development (e.g., workshops, conferences, training)

Yes

Planning for Climate Change

Have assessed whether extreme weather events and/or long term changes in climate will affect our organization's business areas

No

Long term changes in climate have been incorporated into our organization's decision making.

No

Actions to Promote Sustainability and Conservation - Optional (continued)

Staff Awareness and Education

Provided education to staff about the science of climate change

Yes

Provided education to staff about the conservation of water, energy, and raw materials

Yes

Provided green tips on staff website or in newsletters

Yes

Alternate Work/Commuting Options

Allow for telework/working from home

No

Staff have the option of a compressed work week

No

Commuting by foot, bicycle, carpool or public transit is encouraged

Yes

Shower or locker facilities are provided for staff/students who commute by foot or by bicycle

Yes

Secure bicycle storage is provided

Yes

Other Sustainability Actions

Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models

Yes

Put in place a potable water management strategy to reduce potable water demand of building-level uses such as cooling tower equipment, toilet fixtures, etc. and landscape features

Yes

Have put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities

Yes

Have implemented a hazardous waste reduction and disposal strategy (Hazardous Waste: E.g., electronics including computer parts and monitors, batteries, paints, fluorescent bulbs)

Yes

Have incorporated minimum recycled content standards into procurement policy for consumable, non-paper supplies (e.g., writing instruments, binders, toner cartridges, etc.)

No

Established green standards for goods that are replaced infrequently and/or may require capital funds to purchase (e.g., office furniture, carpeting, etc.)

No

Incorporated lifecycle costing into new construction or renovations

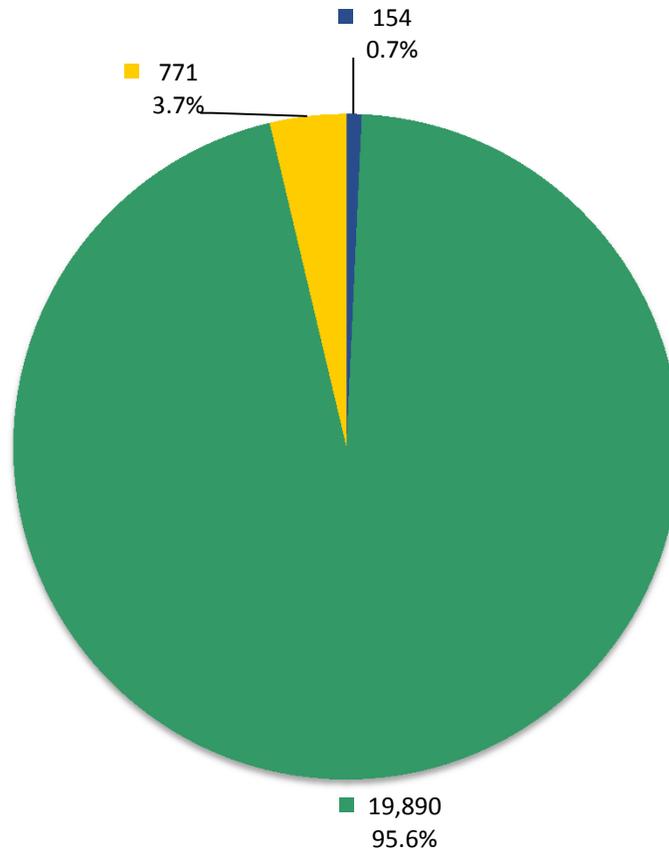
Yes

Please list and other sustainability actions you wish to report not included in the previous list.

Other sustainability actions include:

- 1. Completion of an Environmental Accountability Report, including goals and targets for 10 strategic focus areas*
- 2. Employment of a dedicated Transport Demand Coordinator*
- 3. Continuation of roll out of the Recycling Program across the region*

Provincial Health Services Authority Greenhouse Gas Emissions by Source for the 2013 Calendar Year (tCO₂e*)



Total Emissions: 20,815

- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combustion (Building Heating and Generators) and Electricity
- Supplies (Paper)

Offsets Applied to Become Carbon Neutral in 2013 (Generated May 26, 2014 10:24 AM)

Total offsets required: **20,805**. Total offset investment: **\$520,125**. Emissions which do not require offsets: **10** **

*Tonnes of carbon dioxide equivalent (tCO₂e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

** Under the *Carbon Neutral Government Regulation of the Greenhouse Gas Reduction Targets Act*, all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.